OPHTHALMOLOGY.

UNDER THE CHARGE OF

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Inequality of the Pupils in Health and Disease.—FRÄNKEL (Lyons) divides anisocoria into organic, functional, and physiological. Organic inequality is the expression of a direct or indirect lesion either of the third nerve or of the sympathetic. Functional inequality depends upon some indirect action upon the sympathetic; the third nerve is supposed never to be involved in this form. Certain rare phenomena, however, especially observed in hysteria justify the view that pupillary disturbances due to spasm or paralysis of the constrictor nerve do not necessarily imply an organic lesion, but may be functional. Physiological inequality is congenital, and not dependent upon any known condition. Organic anisocoria is due to a lesion situated within the eye, orbit, cranium, spinal canal, or elsewhere—*i. e.*, at the anterior roots of the eighth cervical, first or second dorsal, rami communicantes, the inferior portion of the brachial plexus or the cervical sympathetic, etc. Moreover, in traumatisms or tumors directly affecting any point in the course of the pupillary fibres, inequality of the pupils is frequently observed from an influence exerted upon the sympathetic, and similarly in affections of the circulatory, lymphatic, and respiratory apparatus.

Functional inequality is practically always due to irritation of the sympathetic—*i. e.*, to a unilateral spasmodic mydriasis.

The pupils are unequal in many unilateral affections of the trunk or limbs, the larger belonging to the affected side. The inequality is only evident, as a rule, when the pupils are dilated and disappears when they contract.—*La Presse Médicale*, 1897, No. 77.

Exophthalmic Goitre.—J. A. SPALDING (Portland, Me.) reports a case in which, owing to excessive protrusion of the globes, the enucleation of both eyes became successively necessary after they had been functionally destroyed by panophthalmitis.

The patient was a man, aged thirty years, who first had blurring of sight in the right eye and paralysis of the right internus. Exophthalmos came on a few weeks later, and after that enlargement of the right thyroid, and increased heart action. The protrusion of the eye increased until the lids could not be closed over it, and inflammation of the cornea and deeper structures followed. After removal of the globe there remained enormous protrusion of the orbital tissues; a hard brawny tissue still continued to fill the orbit. A few months later the second eye became similarly affected, and was lost in the same way. The general condition of the patient improved and the thyroid swelling diminished under use of thyroid extract.

W. F. AIKEN (Savannah) reports a case of exophthalmic goitre following ether anæsthesia. Marked prominence of the eyeballs was observed about the time that consciousness was abolished, and this remained, with other characteristic symptoms of the disease, when the patient was seen nine months later. High hyperopia with astigmatism was corrected, and although no medical treatment seemed to benefit her perceptibly, she gradually improved until, after six or seven years, she was quite well. A hemorrhage occurring in the fourth ventricle is suggested as the probable cause of the attack.—*Transactions of American Ophthalmological Society*, 1897.

The Mechanism of Accommodation.—The question of the mechanism of the accommodation is again being actively discussed and ingenious experiments have been devised for its solution. There are two theories. First, Helmholtz's well-known view is that the contraction of the ciliary muscle relaxes the zonula, permitting the lens to become more convex by virtue of its own elasticity. The second theory especially maintained by Schön and Tscherning ascribes the same result on the lens to a directly opposite effect of the ciliary muscle on the zonula, holding that it exercises traction upon the zonula which, indeed, serves it for a tendon of attachment. The zonula is thus rendered tense and the equator of the lens drawn backward. Now, inasmuch as the vitreous plays the part of an elastic cushion or fulcrum, the lens being pushed against it becomes curved, just as a stick when bent over the knee. The centre of the anterior surface of the lens becomes more convex than the peripheral portion—*i. e.*, the edge is left or rendered hyperopic relatively to the centre.

That this change is a fact, independent of theory, is admittedly proved by Tscherning's optometric and phakoscopic examinations. But this does not necessarily prove the truth of the tension theory. It is also consistent with the Helmholtz view, especially if it be remembered that the lens is not homogeneous, but that it possesses at its centre a differentiated nucleus—*i. e.*, the hypothesis does not require the anterior surface of the lens to become exactly spherical.

But that relaxation of the zonula actually does take place with accommodation is proved by the "accommodative iridodonesis," by subjective (entoptic) phenomena, and by objective measurements. Moreover, the same has been shown anatomically by microscopic examinations of the contracted ciliary muscles in birds. Entoptic examination of the spectrum of the lens shows several punctate opacities. Hess observed that these opacities were shifted uniformly during accommodation. The cause of this is a falling of the lens in consequence of relaxation of the zonula continuing after the lens has reached its maximum of curvature. In different positions of the head the entoptic appearances always corresponded to such falling of the lens. This is inconsistent with the tension theory.

Again, if two threads are stretched in a horizontal plane, one at the distance of the punctum proximum, the other at one metre, the gravitation of